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INCORPORATION OF TREATED STRAW AND WOOD FLY ASH INTO CLAY BUILDING BRICK

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Abstract
High Cd content in straw and wood fly ash, generated from biomass-fired power plants, prohibits its recycling as fertilizer spreading on the landfilled. To improve and alter the current mainstream of fly ash treatment by landfilling, different approaches were tried for treatment of straw and wood fly ash, such as washing with water to quickly recover the highly soluble salts (mainly K and Cl), and treatment of the washed fly ash with elevated heavy metal content resulted from washing by electrodialytic remediation (EDR).
The finding that SiO2 (quartz) accounted for a significant portion in the treated ash, suggests the possibility of the ash reuse in sintered clay bricks. In this study, the straw and wood fly ash treated by washing and EDR was incorporated into yellow clay bricks at different substitution rates. The properties of the clay-ash bricks were studied in terms of shrinkage, water absorption, porosity, density, compressive strength and leaching behavior, and compared with the 100% clay bricks. It's promising to use the treated ash as a secondary building material.